

ALWAYS BRING THIS BOOK

Handwritten signature

IN ACCOUNT WITH

WILLIAMS & WEAVER

DEALERS IN

FINE CIGARETTES

AND

Imported Delicacies

PHINECK, N. Y.

1890

Mar 29 1/4	Red Salmon	1	50
	1 7/4 Flax	2	42
	1 white Pine		55
	1 Red. & Black		50
	10 lb Lard		75
	1 " R. B. Butter		45
	1 lb G. Butter		10
April 2	2 Biscuits		40
	2 Thick Butter		30
	1 lb Blk Fat		50
	3 Coffee	1	05
	1 Coffee		40
	5 Cat Plates		30
	5 H. & P. Plates		15
	10 C. Sugar		65
3	1/2 lb Butter		25
	1 lb Butter		15
	1 " Butter		15
	2 lb Cheese		24
	1/2 lb Butter		40
	1/2 lb Butter		07
			<hr/> 1223

Oct 5	10 ^u Car-Lager	85	
	3 ^u P-Lager	43	12
	1 Can Apples	35	
	4 ^u Prunes	66	15
	8 Butter	2 00	"
	1 ^u Lard	30	"
	1 Can Syrup	25	17
	2 ^u Lard	36	
	1 Can Cheese	10	
	1 ^u Macaroni	18	
	2 ^u Macaroni	20	
10	2 ^u Beans	20	19
"	1 Pair Lard	2 00	
"	1 ^u Lard	75	
"	Shrimp	40	
"	Prunes	25	23
"	4 ^u Apples	40	
11	6 Can Tomatoes	90	
"	1 ^u B. Prunes	45	
"	1 ^u Apples	10	
"	2 Can Apples	60	
		13 87	

1 ^u Sugar	05
Bot Vanilla	1 00
P. C. Shrub	10
Bot Oil	90
1 Raisins	14
4 ^u Lard	20
C. S. C. Myle	36
P. Shrub Prunes	08
6 Butter	25
3 ^u C. Lard	58
1/2 Bu Potatoes	63
1 Mollusks	65
5 ^u Lard	15
1/2 B "	05
4 ^u Apples	56
Lager	1 00
6 ^u Lager	1 00
2 Can Apples	70
1 ^u B. Prunes	45
1 Epps Cream	25
1 Can Lard	6 50
	16 85

Apr 28	2 Rice	20
"	Sack Salt	10
"	2 Butter	46
30	8 Sugar	48
	1 st C. Flour	10
	1 Can Apples	35
	1/2 C. Lard	30
	1/2 Can Potatoes	50
	1 Copper	35
	1/2 Copper	40
	5. Raisins	40
	6. Lard	15
May 1	2 Butter	46
"	2 B. Starch	60
5	5 Oat Flakes	30
"	3 Butter	69
"	140 lb Beans	1.54
8	1/2 y Corn	10
12	3 Butter	69
	Can Apples	35
		832

	1 Pine Apple	65
14	1/2 Can Potatoes	30
	1 st B. Raisins	45
	6 Can Flour	21
	1 st Iron	100
	5. Pol. Sugar	40
	1/2 Can Lard	20
20	1/2 Can Lard	650
	1 Can Potatoes	1.00
21	Can Apples	35
	5. S. A. Meal	30
22	Can Maple Syrup	125
24	5. Cut Sugar	40
"	Can Apples	35
27	2 Pgs Toilet Paper	40
"	100 Powder	45
"	5 Sugar	33
"	3 1/4 Castile Soap	81
28	2.25 Beans	24
"	1/2 Epps Cocoa	25
"	2 Meal	05

29	Pg 4 Cakes	10
31	Bot H. Raisins	20
"	Stone Polish	8
"	Cane Apples	35
Jun 1	5 A Mice	30
"	5 Sugar	33
"	2 Honey	36
5	1 Pa C Starch	10
"	PK New Potatoes	60
X	Pa Rice Flour	12
"	5 Pd Sugar	40
"	7 A Sugar	49
"	7 B Sugar	49
"	1 lb B Powder	45
"	Bot Lemon	40
"	Bot French Mustard	15
11	1 lb Sugar	35
"	5 Cinnamon	50
"	1 Cinnamon	10
12	2 1/2 New Cakes	13
		5 80

Ammer last January		73.16
13	1 lb Pa Cakes	90
14	10 lb Sugar	80
"	10 lb Sugar	75
16	1/2 Gal Syrup ²⁵ + Can	36
"	3 Coffee mix	110
17	1 lb B Powder	45
"	1 lb Cakes	10
please receipt		77.52

June 19/90 (Merchants & Farmers)

19	1 lb Sugar	19
21	PK Potatoes	45
"	Can Apples	35
"	5 S O Meal	30
23	20 lb Sugar	150
"	20 lb Sugar	140
"	C B Sugar	30
"	Can Lemon	45
"	2 lb Raisins	36
		4.96

July 30	1 bag Lemon	35-
	Pail Lard	55-
	1 lb Royal B Powder	45-
	5- Pk Sugar	43
	Pa Magic Yeast	10
Aug 1	6 Lemons	18
	5- Q Mue	30
	5 th E C Sugar	33
	5 Sugar	30
	1 st C Mue	10
	1 st Lard	90
	1 st Lard Coffee	35
	2 Mue	76
9	1 bag Sugar	35
	Lard Lard	10
	5 P. Sugar	40
12	18 White Pepper	04
"	25 Sugar 6 1/2	1 30
	1 Mue	40
		70 98
	Paid Aug 15 th 90	17 87
	William & Irene	

1.40
 14.30
 1.25
 16.95
 10.92
 27.87

Aug 15	4 Cnt Sugar	32
	Bk Tarrh	25
	Pail Lard	55-
21	100 Cnt Mue	40
	3 rd Mue	13
	1 st Polyt	10
23	4 th W Lard	12
"	2 Coffee 35-	70
"	1 st " 38	38
"	1 st Sugar	10
27	26 Bk Oils 55-	14 30
"	Bk Salt	10
30	2 nd Cnt Sugar	15
	10 E C Sugar	65
	1 st W Lard	03
	1 st Cnt Mue	10
Sept 2	100 Tarrh	25
Sept 3	1 B Powder	45
	2 Sugar	40
	3 Sugar	26
	5 th Sugar	38
		2203

22 03

10	2 Currants	20
"	1 Citron	30
"	3 St Oats	18
13	5 M Sage	38
"	6 Lemons	20
"	Bay Salt	10
16	1 st B. Pears	45
"	1 st Car. Lemon	09
"	5 th C. Lemon	35
19	2 Pears	40
"	2 Currants	20
20	20 E. Lemon	1 50
"	1 Lemon	07
24	4 10 th Pears	18
"	10 th Lemon	40
"	5 th Lemon	38
27	5 th Floor	20
"	1 st Coffee	18
Car 1	2 nd Floor	8
		27 87

Calc. .5 .8 1.4 2.3 (3.8) ratio .60
 Formed .45 .8 1.4 2.3 3.4

293

2 eggs together on back of leaf of wild gooseberry
 Yosemite July 3, 1891. Spindle shaped but of
 large diameter, the basal end much
 truncated. Some 20 vertical ribs and
 numerous slight transverse ridges.
 Color shiny yellowish white. Diam
 7 mm vertical height 1.2 mm
Hatched July 7 Hd annular, black shiny
 clypeus & antennae whitish. [Shield .45]
 Body on 3 & 12 a short brownish s-d.
 tubercle. C-shield divided into 2 separate
 elliptical patches which with the anal
 plate are gray. Body white, somewhat
 dotted with very minute piliferous black
 dots. Bill short, black. Feet normal black
 Late C-shield, anal pl. & s-d tubercles on 3 & 12, black
 as the stage advances a blackish transverse
 stripe appears in the middle of each segment
July 12 Hd whitish green ^{shiny} the clypeus
 bordered with black & 2 other black bands
 // with this A, the first over ocelli and

Fed with mixed

crossing central suture below vertex, this second from vertex to occiput. ^[Sh. hd. 8] W. 9 mm C-shield gone, anal plate small, black minutely pilose; on 3 & 12 a pair of small black fleshy processes there on 3 the larger. Each seg. with 4 annulets. Body white, second annulet black, the last pale yellow. Feet all black: very minute black pile over the body.

Molt July 15 Hd yellowish white with the 3 ^[Sh. hd 1.4] black lines as before. W. 1.4 mm. Body as before but no pile except on anal plate. Each seg. is narrowly black ant., then white then a broad central black band narrowly white shaded post. yellow. Horns on 3 are 1.2 mm long, three on 12 .6 mm, ^{Feet black} black.

Molt July 17 Hd ^{yellow with black line as before} as before W. 2.3 mm ^[Sh. hd 2.3] Body much as before, on each seg. as follows yellow (in fold), narrow black, white, broad black; white, narrow black, yellow (running into fold). Fleshy horns on 3 are $5\frac{1}{2}$ mm long, three on 12 are $2\frac{1}{4}$ mm long. Feet all black.

→ pupa becomes uniform green with 12 gold dots viz, on eye, leg base, cell of wing case, base of wing case, thorax, laterally 1 post., Band on 1 granulated ridge yellow edged ant & black. Molt July 19. (12 noon) Head yellow, banded with black as before W. 3.4 mm. Body as before but the black bands are somewhat broader and the intersegmental yellow bands are twice narrowly broken by black lines in the folds. Horns of 3 are $9\frac{1}{2}$ mm long, on 12, $4\frac{1}{2}$ mm. A white spot on black ground at the base of each foot, tentacles black. July 22 (10:55 AM)

Pupa July 23 (7:45 AM) Cylindrical, abd segs. much contracted, motionless, tho. only slightly enlarged. with 4 small rounded prominences at its post edge, one before each eye & one at base of wing case. An elevated transverse ridge on the 2nd abd. segment, ^{post.} Color light green shiny, the elevations tinged with yellow as are the appressed interseg. incisures. Elevated ridge granulated & edged with black in front. Cremaster with a spot above it and several spots below it black. Length 25 mm. width 9 mm. Later the Imago July 30 ♀ *Danaus archippus*

294

A. thecla on *Rhamnus*? Goswami July 3, 1891
 Hd small round retractile, eyes black mouth
 horn W. 1.2 mm Body flattened sq incisions
 deep especially dorsally. In dist. s-d
 ridge but a decided s-v one. Thorax
 rounded, C-shield irregularly quadri-
 lateral, depressed, smooth. Color the
 body & reddish. Body densely but
 minutely pilose, the pile brown. Color
 velvety green with a reddish tint
 (pupation?) the only mark distinguish-
 able being an obscure orange yellow
 line on the s-v. fold. Pupa Th. small,
 abd. large, bulging, flattened ventrally,
 color almost black especially the wing
 cases on the back mottled with purplish
 all minute pilose, the pile brownish
 L. 9 mm Width max 2.5, of abd 4.5 mm

*A. Smaller on Rhamnus. Head d & s-v line & oblique lateral
 ribs. S. wide up to 5, converging just to 5, near together.
 obsolete by 11. Rounded, pilose. L 6 mm Lines below surface*

295 = 289

Feb 16
1891

Little larva on poplar, Goswami July 3, 1891
 pupating. Hd blackish testaceous, whitish
 above the mouth. ^[Sh. hd. 3] W. .3 mm. Body greenish,
 with black warts bearing long stiff black hairs
 C-shield & anal plate blackish. On 5,
 8-9 & 12 a diffuse brown patch.
Molt July 6? Head bilobed, brown black, shiny
 a whitish line each side clypeus and
 labrum white. ^[Sh. hd. 5] W. .5 mm Body greenish white
 the warts large & black but smaller on 11
 Hair bristly black, overhanging head but
 very scarce, almost absent on joint 11 (see B289)
Molt July 12 Hd bilobed, black & shiny, an
 oblique line each side clypeus, labrum &
 antennae white. W. .7 mm Body whitish,
 shaded with black, but bearing a dorsal
 & broader s-d. line of the ground color. Hair
 dense, long, but almost entirely absent
 on 11, black & white mixed, a dense black
 s-d. tuft on 5. Th. feet black, abd feet
 s-v. space & j. 13 white. [Died soon after molt]

Still pupa.

Cae 4 .6 9 1.3 1.8 (2.2) 2.6 ant. 7
 Found 4 .75 1.1 2.6
 (See 393) Stenomacrus notatus Calkins!

296

Little Spilrosoma? a larva July 3 1891

I pale yellow, eyes & mouth brown W. 4 mm
 Body ^{pale} greenish yellow, hairs whitish, warts

brown. Length 5 mm. [Sh. hd. .75]

July 6 Hd as before W. 6 mm Body tricolor

with blue black dots leaving a d. & sd pale line

warts blackish, hair long. pale.

[An. IV] ^{should be 1.7? or 2.2?}

black, w. 2.4 mm Body gray (black mottled

on a pale ground) a dorsal l. & d. yellowish

line. An orange spot before wart ② on 11

Bristles mostly of even length, some longer

warts black, hair black & whitish.

July 10 Head 1.1 Same as before. ^{not July 22}

July 15 Hd. freer, black on the upper

part of the clypeus and horn. so around it

ocelli black, antennae pale. W. 2.8 mm Body

black, somewhat paler below the spiracles

warts ①-③ black ④-⑤ very pale spiracles

white. An orange spot before wart ② on

11 and 12. Hair from ①-③ black, from

11 and 12. Hair from ④-⑤ black, from

11 and 12. Hair from ④-⑤ black, from

B-G fony red. Feet all fony red. A faint
pale s-d line. Body blackish below.
Hair spinosoma-like, of irregular lengths
(another hd 2.6 like the above)

One coonced but did not pupate. ^{not any thick} body

Pupa flattened with a ventral side, abd
slightly tapering, thorax rounded, a slight
depression bet. it & abd. A narrow short
thick furrowed with many thick stiff spines
Dorsal dark red brown L 16 W 6

297

Noctuid on lupine & wild cucumber hd reddish
green, ocelli black. W 2.5 mm. Shiny.

Body green mottled with white, of ~~dark~~ ^{dark}
d. white line, trace of s-d in segregation
of mottling. Dist. but narrow strip light
line, below spiracle on 12, onto anal
feet. Spiracles black ringed. Pil. dots
not distinct. Another smaller, hd brown
Pil. dots white, s-d line more distinct
Lateral pale brown spaces mottled with
black. Hd brown reticulate with dark
brown. Anal pl. & shield dark brown
the latter edged in front with black. The
mottling give appearance of oblique seg.
shades. Pil. dot black, anal & surges
by white.

Donago Sept 11, 1891 Cat. no. 6813

Hadena erebina French

298

5th larva on lupine Head bilobed, the
apices of lobes pointed, roughened, pilose
uniform non-lustrous black. W. 1.9 mm
as collected. 2 concolorous with body. Body
yellowish green covered with little yellow
granulation which seem to segregate to
form a s.d. line. Feet all concolorous.

299

Noctuid! on Endomys-bean Yuccite July 7, 1891
Hd. white with 3 curved geminata vertical
brown lines ^{on each lobe} continuing the lines of the body
a brown vertical streak in clypeus. Mouth
antennae white; a few hairs. ^[Shhd 1.2] W. 1.1 mm Body
^{cylindrical, slender} very much like a larva & larva has all the
motions & attitude of one except perhaps the stick.
The legs 7 are absent; on 8 the aneural
rudiments without hooks; on 9 & 10 present,
well developed, as also on 13. Yellowish
white with 3 brown geminata line on each
side, the enclosed spaces somewhat darker,
& a single slight dorsal line. On the venter
is a median ventral brown line & two gemit
lines each side of it, like those above.
Legs pale except those on 9 & 10 dark brown
enlarged into a patch on joints 7 & 8 (where legs)
Next Jul 13 Legs present on 9 & 10, on 7 only
a slight bulge but no traces of legs, on 8
a small pair which seem to be used
Body colored as before except that

the legs are not brown but concolorous with the body - yellowish streaked with brown. The brown ventral spots are present on 7 & 8 that on 8 just ant. to the little legs.

(reel)

Send extra to Miss Hall!

BB300 Pupa much as in asterius long and rather slender, ^{H. G. DYAR} a little longer head & somewhat angustate ^{STNT} for ^{BUR} ³ ⁵ ^{FA}, or ^{CL} eye and one on thorax centrally; a slight prominence at base of each wing case; 4 sd rounded ^{roughened} prominences on each side of ^{the} abdomen. Cremaster very broad, ^{thorough} flattened, short. General color pale wood brown, darker on the head, brown & roses and slightly streaked with black; a faint blackish rated shade. Length 31, width 8 mm.

Calc. .63 .97 1.5 2.3 3.53 ratio .64
 Toned .65 1.0 1.5 2.3 3.5
 10/28/91

det. by Prof. J. W. Congdon through the kindness of Miss F. M. Hall of Waukena, Cal.

³⁰⁰ H. G. DYAR gairdneri. Benth & Hodge
 Eggs on flowers! of lily-bulb-carrot. Yosemite July 7. Nearly spherical, black. CL. ³ ⁸ ³ ^{FA}. ^{CL} ^{CL} flattened slightly shiny, black, smooth. Diam 1 mm
Hatched July 7 Papilio? Hd black, shiny with a few short hairs. W. 6 mm Body black covered with rows of pale tubercles each of which several minute hairs. A pale dorsal patch on joints 7 & 8. Colored pale. As stage advances the color becomes brown
Molt July 12 Hd. rounded black & shiny, labrum whitish. Many fine black hairs. W. 9 mm [Sh. hd 1.0]
 Body black with 3 rows of conical tubercles bearing short bristles, all black except those on 7 & 8 which are white at base. Some irregular lateral white spots on 7 & 8. Bases of 3rd row of tubercles slightly orange tinted especially the one on 12. Feet black. As stage advances ^{3-d & lateral sub stig} the tubercles become surrounded with reddish at their bases
Molt July 15 Hd rounded, black shiny, labrum whitish. on short inverted V-marked and

Calc. I 79, (II 1.13), III 1.62, IV 2.31, IV' 2.7,
V 3.3, (V' 3.9), VI 4.7. ratio.70, r'.83

Found H. G. { DY 27 3.2
 Imago June 17 1892 Cetus 2016 Nadatebdenensis
 YOSEMITE, CALIF.

Little black fly? or vate (deciduous) July 2, 1891
 ♀ ^{III} large, slightly bilobed antennae; a little
 hairy, flattened at front; pale green
 hairs shiny, mouth white, ^{flange} well black W [St. W 1.4]
 Body slender, smooth, no perceptible hairs
 legs normal. wings, somewhat shiny,
 a broad yellowish-green spot below. Sp-
 ular black Feet concolorous.

IV
Run 3 July 76 HA large, very slightly flattened, 1
 flattened in front. Shale green. [Sh. ht 2.2]
 small black, mouth white. W. 2.0 mm.
 Body slender, uniform green. A very
 distinct, rather broad pale yellow sub
 band from the anal pte. Spines
 black, finely serrated by minute
 scattered very small & short hairs.

IV
Two diff. 23 head large flattened in front,
very slightly bilobed, smooth, [5.6-6.1] 2.7
pale green, cells black, a few black W 2.7 mm.
Body ann. rated, leaf green, with yellow
inflores. etc. head very small etc.

On c-sh. 6 ventral transverse dusky white streaks. 2, and 10th abd segs deep green, 1st whitish green as feet & body pinkish to gray. **HOSEA** **DYAR** (#13) (mide 2nd seg)
 1st seg of ant. **YOSEMITA**, **COAL**, yellow & d line from 2 ant. to end of anal plate. Feet, concolorous. Spiracles black with small white centers. Labrum white, jaws black, ^{at ends}
 1st seg of ant. **5** 1st slightly beveled, narrowly to vertex, pale green, not shiny; ocelli black on white ground, labrum white, ^{at tip} jaws black, antennae yellowish
 1st 3.2 mm, sides yellowish green, spots irregular, ^{electrical} yellow granulation, a distinct ^{brown} yellow s-d line from 2 to anal plate which is rounded, ^{dark brown} spiracles ^{palicentrally} whitish yellow spots, ~~tan green~~ tipped black 2 segs of ant. yellow in front, head
53 VI Clypeus small, triangular. Red as above s-d line faded on 2 ant. Spiracles dark orange. The irregular flattening elliptical yellow granulation are dense. Feet tipped with yellowish. In stage adv. the jaws become ~~yellow~~ ^{whitish} white, ^{in some sp.} the 1st seg has a whitish bloom, the granulation become whitish, the 1st line ^{some yellowish} yellowish white with yellow tips ant; the edge of anal plate ^{which is} orange red and segs of 2 remain yellow, legs & feet white

Poplar (H. G. DYAR occasionally)
Willow (an egg shell size)

H. G. DYAR

July 9

YOSEMITE, CAL.

July 8
Egg of BB 291? a poplar (shell on same place as 291
was got like) egg hemispherical, the base flat
smooth, color and lustre white. Diam 1.1 mm
Singly on either surface of the leaf. The
microphyle is thinner than other parts of the shell
Hatches by a hole in the side; shell not eaten
Hatched July 13 Hd slightly bilobed black
along, labrum white; 2 fur hairs W. 6 mm
Body pale white; c-shield, anal plate &
thoracic feet black. ^{the 1st pair of legs} ^{the 2nd pair of legs}
the hair blackish. ^{the 3rd pair of legs} ^{the 4th pair of legs}
Dorsally, a 5-8 blackish ^{blackish} band,
black outwards. ^{the 5th pair of legs} ^{the 6th pair of legs}
Near end of stage a purplish patch appears
in the location of pil dots ① on 12, pil. dist & black
Body greenish white ^{the 7th pair of legs} ^{the 8th pair of legs}
close together. white dots on ant legs ① & ②
are nearly in line or 11 they are more rounded
on 12 denser than normal. Dots ③ ④ as stated
③ lateral, large, ④ small ⑤ with 6 to be
made out. (on legless legs ⑥ present, in line

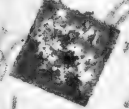
H. G. DYAR

with ③, and ④ also, ^{ventral} (segs. 1)
July 16 Hd. slightly bilobed, narrowing
to vertex, flattened in front, large. Shiny
straw yellow, brown on the vertex of the
lobes, mouthparts whitish ocelli black
W. 1.1 mm Body slightly enlarged with
with a dorsal rounded conical process
bearing 2 divergent setae, (color a dark
red brown) Body slender, not shiny pale
whitish green, with a faint, shiny
yellowish band ^{interrupted} ^{black} ^{black}
dark red band. The feet & bases of
the 4 ant. pairs of abd. feet black outlying
Piliferous dots absent but the setae
present, with a hard, firm, blackish,
c-shield & anal plate absent.

(See BB 309A)




→ under/s in obj. closely covered with dense ^{very small} granulation apparently not smaller at the
microphyle, but fused in a small white
spot there


Poplar (Populus balsamifera) ✓
 Willow (Salix) ✓
 Liliac (Ceanothus integerrimus) ✓
 maple liliac (crophyllum) ✓
 chokeberry (Rumex crispus) ✓
 IX
 Jan 31
 303

Egg  on Poplar Yucca July 8
 Spherical but the base much flattened
 Smooth, sublucent (black when found)
 Color Diameter 1.8 mm.

[Larva 2 stage II] just hatched. Hd rounded, slightly retused and 2
 smooth shiny, ^{dark} brown, ^{pale over clypeus & mouth} ~~much paler~~,
 ocelli black, a few very short hairs on lower
 part [Sh. hd 1.4] 1.2 mm. Body (enlarged 2-5,
 narrower 6-10, short & rather square.)
 A shield broad, pale brown with a rounded
 minutely pilose process at each side.
 On 3-5 & 10-12 a series of 2-d. rounded
 shiny horn-tubercles with smaller d.
 lateral ones on 4 & 5 - all other rudimentary
 Body smooth, non-tubercles blackish brown
 paler subventrally & below, joint 11-13
 entirely very pale brown. A dorsal white
 patch on 6 & 7 (slight on 8) running down
 & slightly forward at the sides. Feet pale
 [moth] hd .8, slightly below d. black &
 shining, stylus & bases of antennae pale

Calc.	.82	1.27	1.95	3.0	4.6	ratio .65
Found.	.8	1.4	1.9	3.0	4.5	

   Large pilose tubercle each
 side of shield, 2 as 5-d row of ^{smaller but} ~~smaller~~
 tubercles those on joint 5-9 much smaller
 than the others. Body velvety black with
 a white saddle on 7-8 and the central
 shield pale brown. Length 3 mm. (hd)
 Mol B July 14 hd rounded, ~~fully covered~~
 shiny pale ^{pale over clypeus & mouth} ~~reddish brown~~, ocelli
 black. [Sh. hd 1.9] 2.1 mm. Body enlarged 3-6,
 elsewhere of more uniform size. On 2 and
 a slit from which protrude the jointed
 tentacles. On each side of it is a rounded
 tubercle; on 6-shield. The other tubercles
 are rounded, smooth, much reduced in size.
 The dorsal ones on 4 are brown, the 2nd
 & 3rd having a small blue dot above them
 & separated by a black line. The 2-d on
 12 & 13 are colored whitish. The 2-d on 3 &
 5 & 6 whitish, @ on 5 having a blue dot above
 5-d on 9-11 very small, turquoise blue.
 All others nearly undistinguishable. Color
 rather dark green, very minutely dotted

with whitish shading into white s-v.
Ant  2 pale yellow. On 8-10 a
white saddle as before and 12 & 13 white
dorsally. Feet all pale. Tarsi 3-4 &
stig whitish. A few white dots
on the ant. segs and on joint 13.

Molt 4/19 Admouled, partly extended, feet
slightly ^{filigree} brown, whitish around the mouth
ocelli dark brown. W 3 mm Body enlarged
3-4, tubercles gone except short ^{s-d} and ^{minuted} pale, dotted
nervures on 2 & 12. Dark ^{transverse} line
at the side & below a narrow ^{transverse} line
on 2 ant, covering s-d. ^{transverse} lines. On 4 a
marking in the place of the former tubercle
which are reduced to rudiments. a follow
a yellow dot below & a black just below
a blue dot, a yellow pyriform yellow patch
covering ② & ③ bordered with black & divided
by a black longitudinal line below ② and
containing just above ③ a blue dot in a
black ring. On 7-8 the dorsal & lateral
saddle, creamy white and broken into
several spots. On 8-10 faint s-d blue

2 imago Jan 31. 1892 Papilio rutulus

dots representing the absent row ②. On
11 a s-d ^{an illon} creamy white mark & on 12 a short
transverse band, covering small tubercle ③.
A faint whitish stigmatal line, in the
incision bet. ⑤ & ⑥ a black band edged yellow in front
^{an illon} the same but saddle gone, dot in pyriform spot
violet, trans. whitish band on 12 faint & broken.

Molt 5/21 Admouled, flattened in front of pen large
its tubercles dark ③, herself shagreened, with fine filigree
pinkish brown, whitish on lower 1/3, ocelli faint
brown & faint whitish; width 4.5 mm. Body enlarged
4-6, tapering to anal extremity. smooth, ventral tubercle
2 yellow on 4. Body a north green, yellow dots ^{row ①} ^{on 8}
lescent. On 5, 11 s-d deep blue dots ^{row ①} ^{on 8}.
On 5, 8-11 row ②. On 6-12 row ③. Red ④
black band yellow in front, in outline, s-d. s-d.
mark on 4 - ①. ② yellow, black edged, pale
blue dot ③ & ④ rounded pyriform spot, edge
a little irregular containing a tubercle, black line
not reaching edge. ^{the blue spot} blue spot in rather broad
black border. ^{the black line} black line ^{on 307} except mark
only is not true color. Some spot more rounded
not so pyriform (and so much divided by
the black line below) ⑤ dot blue not violet into
black border slightly narrower. The upper
dot on 2 seems more reg. ⑤ less elongate &
is rounded on the upper end. Length 46 mm
But mark is variable the spots constantly different
some ① not true color ② and ③
Pupa same as 307 but legs not green L 36 W 10

Calc. .23 .39 .65 1.1 1.8 ratio .60
 Found .25 .40 .60 1.1 1.8
 CAL. ROSEMITE, CAL.
 DYAR. H. G. DYAR. July 31 1891

Physcides? eating the inside out of Linette
 leaves & making a little web. July 10, 1891
 Stage Head shiny black; w. 3 mm Body cyl.
 c-sh. anal plate black; fine black
 hair from minute black elevated spots
 [sh. hd. .25] larvae pale
 Stage 3 Head slightly bilobed, shiny black,
 [sh. hd. .60] with a few hairs. W. 6 mm Body c-shaped
 & anal plate black, spined processes densely
 spined, and long, rows @ @ black the
 rest black & pale. Body black on dorsal
 half with a black dorsal line, 5-8 & d
 ventral regions pale whitish. The feet
 black, abd. black. W. processes as in Junonia
 [sh. hd. .40]
 Inst 2 July 13 Hd black & shiny W. 3.5 mm Body
 curved with heavily spinous or rather conical
 elongate tubercles with many densely hairs
 Body vivid greenish, shaded with black
 dorsally, the c-sh. anal plate & spiracles black.
 [sh. hd. 1.1]
 Inst 3 July 14 Hd black, Head slightly bilobed,
 rounded, with large mouth perfectly
 a number of hairs Color shiny black

later geminate dorsal, 5-d, stig 1 sub stig
 line, not very distinct, formed of yellowish
 minutely on the body ground color.
 Labrum whitish: hair black,
 YOSEMITE, CAL.
 Body covered with conical processes, 5 mm long
 densely spined & arranged as in Junonia
 Body incl. c-sh. anal plate & spiracles
 all deep black, grayish felt on and
 subventrally the 4th row of spines and
 a stigmatal band running along the
 bases subtranslucent white. The feet
 and last pair of abd. feet black, the other
 feet much paler & clasper whitish.
 [Inst 4 July 16 Hd .40, new head .60 mm.]
 Inst 5 July 18 Hd black (shiny, hairy, a whitish
 streak on the side of the vertex, each
 lobe W. 1.8 mm Body black above, yellowish
 [sh. hd. .50] below with a faint geminate yellowish
 d-line. Conical spinous tubercles, as in Junonia
 black @ shiny yellow. Spiracles black,
 The feet black, abd. pale.
 Pupa July 22 Suspended by cremaster, of usual
 shape, thorax not carinated but with 2 blunt
 points, and feet rounded, coxae unduly
 prominent, a depression bet. the 2 abd.
 abd. strongly along ventral side, curved

dorsally with fine ^{fine} ~~fine~~ of short blunt
 point representing the apex of the larva.
 Circumaster flattened, rather long.
 Head ^{whole} uniform dull horn ~~horn~~ black
 mottling on a reddish brown ground color
 the dorsal tubercles reddish. A row of
 white dots on antennae bases
 and around border of wing cases. Length
 12 mm; width 4 mm

Calc 8 1.2 1.8 2.7 4.1 ratio .66
 gnd 27.91 8 H 1.3 1.8 2.7 3.8 Buta VII

Nearly spherical, the base of lateral, smooth
yellowish green, very little shiny. D. 1.3mm
A red shade appears on one side of egg.
making it look like a miniature wife of very
Hatchling June 10. Red. round. red. shiny.

* Late spring, yellow, black is a very pale
brown - which and white, etc.

Molt 24 Nov. - shed shiny, dense hair.
Hairs are long & smooth, black, some
a few short hairs on coracoid
Body - w. 1.3 mm. Slightly retracted under
S-d tubercles on 2, 11-13 rather large with
a few setae, all very smooth covered
Feet small, shiny. Color quite brown.

H. G. DYAR

mottled with darker brown, a white saddle
 on 8-12 pointed feet & reaching down
 ground on the sides, Pale subventrally,
 a whitish s-l line. J2 is yellowish
 & J3 & 4 paler than the rest of body. Below
 vent 10 on 3, 4 & 6 is a velvety black spot.
 Body enlarged 7-8, changes uniform.
 As stage adv. the color becoming even esp. 4-6.

Mus July 28 ad. m. s. f. faint, faintest, pinkish
brown on top of head, pale black; width 1.8 mm.
On a sd. other tubercles 5-7 of line
and a slight one on 12, all the rest reduced
to slight round shiny elevations. Color
at 4-6, elsewhere near white - eyes
color dense green, pale at the sides, slightly
shaded with blackish and minutely
speckled with yellowish; on 1-9 a white
saddle, commencing before a pointed behind
passing slightly below the decussation between
narrow white s-d. line & extending to
faint dorsal green dots. 12 & 13 whitish.
Tubercles 0-3 on 4 white distinct, rounded.

H. C. DYAR

shiny dark brown, connected by a pale
brown line, the 3rd line is between
① & ③ and just above it is a black bar
and below it a minute white dot
enclosed with black. No other black dots
but a blackish-d one on 9. Shiny dots, red or brown on 3, 5 & 11. Ant.
edge of 2 yellowish brown. [sh. lid 2.7]
Wolff Aug 3 much as before; w. head 2.5 mmf.
^{unhatched}
2 ant yellow, the tubercles each side of ant
orange, tinted. Body dark green, whitish 5-8,
only traces of orange left in diffuse d.
whitish patches on 11 and on 12 a small
spot on 9, on 12 & 13 a small yellowish
tubercle. On 8 wants ①-③ small, round, orange
tinted; on ① below an elongate black ringed
patch & a blue dot; below ② a black line
and a yellow pyriform spot that covers ② & ③
enclosing above ① a black ringed blue spot.
~~all mounts~~ (black ringed) No other black
dots, the places of absent s-d tubercles
being slightly paler green than ground color

Imago Feb 8 1892 Cat no 6947 *P. sylvestris*

to fly light; ^{absent} **DXAR** brownish, paler
mixed, in incision bet **RA** & **AB** black band
edged out yellow anteriorly, concealed when at rest

July 5 ¹³ Hd round, sutures deep, minutely
dotted with very short pale, pinkish
brown, whitish around mouth, ocelli black

W 3.8 mm Body entirely smooth, uniform
whitish at sides & beneath
soft green, minutely dotted with yellowish
and obscurely 2 yellow ant. around the

base of ant. The marks on it are without
cause
black & consist of a rounded ^{below} **yellow** spot
in black edge, a blue dot, then a ^{black edged} **figiform**

spot, very shyly **yellow** in front & produced
on its lower part side, divided above ^{the} middle
into white & orange, below yellow
a narrow black line containing a **black** spot

with violet center ^{reaching lateral to lateral} **black** line
In fold bet 5 & 6 black band edged out.

On 5, 7, 10 & 11 blue dots represent rows **D** & **C**
and 5-12 a S-shap. row of blue dots (Spiracles
small, white, in a broad brownish border)

As a lateral pale blue dot on 5 ^{the} **mark**
the transverse band is shaded with **mark**
becomes to a collar color, except the lower part
lying upon spot which is yellow shaded with **transverse**

* 308

Spilsoana vittata? on ground July 11, 1891
Hd pale brown, a spot on each lobe, ocelli
& mouth blackish. W. ^{Sh. hd 1.1} **Body** densely

spotted with black, especially s-d, on a
pale whitish ground. A broad dorsal
& lateral pale red line. Vents as in

Archia, black, hairs rather bristly, black
but not very plentiful. Htd under leaves.

July 13 Htd 1.7 Same. Hair from 2 very
long brown feet.

July 22 ^{the} **black** dot in broad black **mark**

307 **H. G. DYAR** *Papa fig 27* **Syllin**
abd. tapering in **diffusion** but the **abd.**, a
S **IT** **B** **RB** **FA**, **C** **L.**

blunt **trifurcate** **thoracic** **joint** **pygid**
forming 11 with a simple process near end. eye
a slight lateral projection at base of **eye**
a row of s-d abd. granules elevated, three
of which are **anterior** **dark** **brown**, long &

the dorsal streaked with olive brown, very
conspicuous, a s-d line of deep **shaded**
over the dorsum, continued as a broad **shaded**
to end of **thor.** **projecting** a broad lateral
similar, round **band** **whole** **length**, **diffuse**
above shaded **the** **way**, **cases** **basally** **below**

35 W 9
the leg cases

Calc. .67 1.04 1.61 2.47 3.8 ratio.65

Found H. G. DYAR Aug 9 91
309

YOSEMITE, CAL.

Specimen on Poplar July 12, 1891. Hd slightly
bilobed, mouth pointed; dark brown, shiny
mouth & ocelli darker; a few short hairs
w. 6 mm. Body enlarged at 12 dorsally
in a hump, feet normal. C-shield
distinct blackish as is anal plate.
Small black piliferous dots on body.
(4 seen @ side by side @ lateral)
Body pale green, feet all black. Pubescence of
No process on 12, simply enlarged dorsally
into B-A Eats down leaf & eats in the underb.
Hd rounded, pale green, not shiny, mouth
antennae & ocelli brownish; a few short
blackish hairs. [Sh. hd. 1.7] w. 1.6 mm. Body cylindrical
a slight s-v. fold. J. 12 enlarged dorsally &
continued into a process like a tapering
horn pointing straight up nearly 1 mm long.
C-shield & anal plate not distinct, con-
colorous with the body Body whitish green,
not shiny, an obscure yellowish sky
shade below which is a dark red

[50000302]

H. G. Dyar
s-r band, somewhat interrupted, feet
all dark red. ^{JOSE} Process on 12 ^{black} rounded at
tip & bearing 2 minute divergent setae.
Similar minute setae arise from the
~~on~~ obsolete piliferous dots. Spiracles brown
centrally. Segments trans. ~~ceased~~.
Molt July 14 Hd large, flattened in front, very
slightly bilobed - uniform yellowish green,
a few minute setae. ^{Feb. 14 2.4} W. 2.6 mm Body
cylindrical, slender, enlarged at 12 with
a conical mutant process 1 mm long
bearing 2 small ^{diverg.} setae before the tip.
Piliferous dots minute, yellowish green
a sub-sty yellowish band & below
it a dark red one, staining the bases of
the legs. The feet, dark red, the abd.
tinged with red except the anal feet
which are green. Spiracles large, white,
narrowly ringed with black. Process on
12 red. Later body has a purplish tinge
except on the sides of 2. Spiracles broadly
surrounded by white V

May 11 H. G. DYAR
 smooth shiny. **YOSEMITE, CAL.** brownish
 tinge and densely mottled with faint yellowish
 spots. Small, pale, brownish $\sqrt{W. 3.8}$ mm. long,
 slender, 12 produced segments and a
 long conical horn, ^{slightly dilate anteriorly} ver. thin at base. Anal
 plate large, nearly circular, with a knobbed
 elevation in the center and coarsely gran-
 ulated body, green with a strong brownish or
 purple tinge especially on the middle yellow
 segments. 2 ^{dark} green ant. $\sqrt{}$ On each joint centrally
 a ^{blackish} purple shade band, absent on 2, 5 & 11
 complete on 3, on 4 tinging bases of legs $\sqrt{}$ on
 7-10 small distinct on bases of legs $\sqrt{}$ on 12
 running just to spiracles and beyond to
 the vertex of the horn $\sqrt{}$ Anal plate green
 with a broad red brown border. Spiracles
 large, black, ^{the rest of the plate with a black border} sunken and with white $\sqrt{}$ and
 outside third to a purplish shade $\sqrt{}$ 260.
 feet all brown, a broad median ventral
 pale green band. then to black on its
posterior side. As the stage advances the

Some examples, almost entirely black the
black band except the very strong
entire head & body becomes light purple
except the feet which are red and the
anal plate which is colored as before. The
and median ventral band
blackish based remain as the color of spots
are does

There are black dots on 3, 12 & base of 1st pair
2nd pair spots on central abd feet separated by a black
line as shown in reflected in image of the boy,
which looked like a white dorsal line.

Image Aug 21 *Pheochelone*

Eggs on Poplar Aug 12. Hemispherical, base flat. Covered with vertical striae, many of which do not reach vertex. Sublucent black; diameters .7 mm. (Fries)

Another, shell on willow (hatched) under 1/2 in
a few minute reticulation around nuchal
the sides very large vertical ridges, separately
as they pass down sides & others arise between
them, all crossed by very small transverse
ridges

Pupa cylindrical abd rounded, its segs appressed
 almost very short but bases thick, whitish
 hooked bases, center of segs. densely &
 finely punctured. width 5 mm. Color dark
 Chestnut H 17 f 9 311

Raphia on poplar, *Myrmica* July 22, 1891.
 Hd rounded, partly retracted. Ground
 very greenish white, *scutellum* pale, *pronotum*
 white. *min* Body robust of *fung*
 uniform width, 13 *abdomen*. *intense*,
incisures deep. Body translucent clear
 green with many yellow *piliferous* dots,
 on 3 the 4 dorsal ones tipped with red
 other 2 central of these prolonged into short
processes - very close together. On 7, 9 & 12 a
 curved transverse yellow band reaching
 to the first dot above the spiracles, whitish
 anteriorly and those on 9 & 12 partly bordered
 in front with crimson. Feet green. The
 anal ones tipped with yellow & crimson.
 Spiracles small, black. *lat. dots* 8 on
 each side beside a dorsal row of *avon-*
piliferous yellow dots, looking just like the
 others. *larva* pupa July 25 *corn* of bits of stones
 & dirt held with threads. very hard & firm.

Imago Aug 8. *Raphia coloradensis* (M. 5) 84

Cooper on willow July 19, 1891. Hd held out flat
 in line with a white *disjunct*, blackish
 gray, a pale transverse line and broad *v-marks*
 over top of *clypeus*. Body enlarged at 3 with a
 8-d hump *bea* - a white tubercle. - a *small*
⁵⁻⁸ *small* ~~small~~ ⁵⁻⁸ *small*
~~lateral~~ hump on 6, slight dorsal humps
 on 5-12 largest 8 & 9 but of no great size
^{very small} ~~more~~ on 10 & 11 color dark gray mottled
 indistinctly with blackish and dark brown
 on some of the humps but no distinct
 markings. Resembles very closely a dead
 twig. (collected. I don't say 14)

Calc. .79 1.13 1.62 2.31 3.3 4.7 ratio 1.0
 .75 1.55 2.35 3.3 4.6

insects do not move with any slight anfall
 7 obscure rounded depressions but really smooth
 smooth.

YOSEMITE, CAL. Aug 15

Egg on oak Yucca July 20, 1891. Not more than hemispherical, base flattened, smooth not shiny with a yellowish tinge 1.2
 Hatched July 21 Hd slightly bilobed, rounded shiny pale greenish with a few hairs. Mouth blackish, ocelli black. W. .75 mm. Body slender feet normal, no tubercles, no bumps, smooth shiny pale yellowish green. Setae minute rather long but not curved, blackish. Setae on legs arranged green with yellow 5d line like small hairs. Body annulated, ground.

not 25 Head round, not shiny pale green as before; w 1.55 Body pale green, annulated with a broad 5d line from 2 bordering annulations. Setae black. [See BB 301]

not 28 Head 2.4 mm [Sh. hd 2.4] [Sh. hd 2.75] [Sh. hd 2.8, 3.0, 3.1] not like 301, 5!

not 44 Head 3.2 [Sh. hd 3.3] [Sh. hd 3.7] [Sh. hd 4.8] not like 301, 5!
 not 57 Head 4.6 full, rounded, slightly flattened in 2, obscurely shagreened, slightly shiny. ocelli black on white ground, mouth uniform long green.

parts whitish, jaw green, black at tip. (See 301)
 * not new head 4.8

Calc. .81 1.27 1.98 3.1 4.8 rat. .64
 Found. 2.0 3.1 4.4

of d. 11/91 314 *Hosnelia grandiflora* Benth
 Endomysid? on Yucca 280. Stage 3 Hd 2 mm
 Hd large rounded slightly bilobed, rounded, shiny in front, d. small
 luster black, c. 6. large shiny black, 2 black red, body green, mounted. Shaded with yellow & filices, 12-13 yellow: obscure darker d in the feet tipped blackish. Faint blackish mottling, separating into very obscure trans streaks.
 Stage 4/3. Hd 2 mm. Body 1.5 mm. Subventral blackish. Head orange-yellow above each antenna 2 setae. Body annulated shiny black, feet 2 setae. Head 1.5 mm. Body 1.5 mm. Head blackish annulated seg. setae 3 are more distinct. Setae black. Body yellowish.

not 57 Hd large rounded slightly bilobed, rounded with front granulation. Setae blackish. Head more blackish on lower half, a large yellow patch above each antenna indicated by the ocelli. W 4.4 c. 6. dark shiny blackish brown, 2 with foot dark red. Body green with d. filices. Head blackish mottling, separating into obscure trans. lines. Setae blackish. Head 1.5 mm. Body 1.5 mm. Head blackish.

Imago Feb 10, 1892 *Endomys californicus* H. G. Davis

315

Spring on grape vine. Hd. apicoid, slightly
 bilobed, clypeus large. Pal green, not
 shiny, mouth brownish. W. 7 mm Body
 normal, cylindrical, annulated with
 very minute hairs. A very long, movable
 caudal horn (4.5 mm) uniform pale green
 brown black, flaked at tip, minutely
 pubescent, brownish at base. Larva 9 mm
 no 2/28 Hd same; w. 1.4 mm. Body
 annulated, minutely granulated but c-sh
 2 anal plate smooth; pale green, the
 annulations & a s-d stripe almost
 white. Horn long (6.5 mm) movable
 w/ brown brown & covered with setae.

Molt 3/27 Hd much as before, not shiny pale
 green, ocelli blackish W. 2.2 mm Body pale
 green, covered with coarse pale yellow gran-
 ulation which are close together in cer-
 tain places & slightly confluent, giving the appear-
 ance of a s-d line 2-12, and a lateral
 oblique line on 6-11 each. (below s-d)

on each side & a small pale transverse crescent
 near the middle, & a soft black dorsal shade.
 projected upward on 12, opposite the bottom.
 Papa died Nov 4, 1892.

about 1/2 in above the s-d line to caudal
 horn. Horn long (8.5) capable of being bent
 forward onto the back, ^{PL. III 3} & slightly
 fringed at tip. It is reddish brown here at the
 tip and yellowish green at the swollen base.
 Blades later forward over back when disturbed
 1-3 partly retractile and joint 4 entirely so. [Sh. No 3.4]

Molt 4/31 Hd rounded, clypeus large, w. 3 mm
 Horn 12 mm. nearly straight, slightly curving
 forward with flexible enlarged base and
 can be bent forward over back, base as hinges.
 Hd dull purplish, neck uniform, faintly iridescent
 in 2; 4 large, 2, 3 faintly retracted beneath it.
 Bod covered with light lab. ated yellow dots which
 are 5 are black slightly, a dark dorsal shade
 line obsolete and, a narrow & d yellow line
 from 3-12, faintly continued to anal plate
 & produced into a point opposite the horn. Color
 purplish looking with a greenish shade on 6-12
 a row of 50 or 60 lateral bands, passing over the
 spiracles, white edged with black which is
 blended into the ground color. The ones on 4 & 12
 are faint. Horn purplish flesh color reddish
 at base & tip, constricted just at base & resting on
 the back part of apiculus elevated base, yellowish
 orange, encircled with black & containing a large
 black spot just anterior to the horn.
 Molt 4/7 Hd same, shagreened, shiny soiled purplish
 brown; w. 5 mm. C-sh large, conical with broad
 caudal horn & legs are retracted. 4 July 1-3
 telescoped under it; 12 enlarged dorsally with circular elated
 smooth shiny bottom in place of horn. Body blackish
 single brown covered with small spots. Spots white & s-d
 with whitish center, a broad whitish dorsal line spiracles white
 on 6-11. oblique white bands from joint post to apiculus & s-d line
 broken into 3 or 4 oblique spots. Dorsal band with black
 bottom black with a reddish orange longitudinal line at caudal

Calc. 47 .75 1.19 1.9 (3.0) ratio .63
 Found .8 1.15 1.9 3. ⁴⁶²⁰92

316

eggs like goldbeetle on willows & poplar July 27/91
 Slightly more than hemispherical, the base
 flattened & smooth, subventral black, under
 to glass, very minutely punctured. Exam 1 mm
 under 1/2 in obj. covered with flat regular reticu-
 lation which become very small at the
 micropyle. Between them the surface seems
 smooth with a few extremely minute punctures.
 Hatched July 28 Hd round, shining, dark
 red brown, almost black; ^{a few short hairs} ~~clayey~~ mouth
 parts pale, ocelli black; w. .5 mm. Body
 smooth, of even width, a pair of 3 d spinose
 processes on 2, the 1st feet modified with a
 pair of spinose stemapoda 2 mm long. ^{shield very dark small} ~~Body~~
 blackish red-brown, feet & venter whitish
 two dorsal greenish patches, one on 3-5, the
 other on 10, elliptical, diffuse. ^{as at 1st. also on 12} ~~the~~
 On the 1st, one or two number of minute white
 hairs, annulated with a ^{at} ~~very~~ ^{at} ~~very~~
 white just before the tip. Released
 threads black, ^{at base of} ~~white~~ ^{at base of} ~~white~~
 (See after 310)

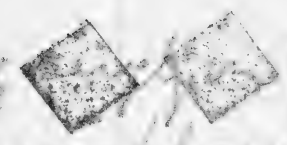
317

Apatela like #289 (moulted twice before I observed
 any difference) on willows Hd black, ^{clayey} ~~clayey~~
 large, entirely shiny black; base of antennae
 whitish, W 2.2 mm. Body enlarged at 12,
 black, ^{reddish} ~~reddish~~ ventrally. Ventrals
 black; a distinct broad white subventral
 band, tinged with reddish narrowing at
 the center of each seg. & nearly broken by
 vent 5. Ventrals as in 289. Hair mostly
 rather short, spreading from the trunk,
 whitish mixed with black, from ①-⑤
 on 5 & 12 black, black, but not planned
 just before 12. Hd shiny brownish black, pale in
 center of clypeus, base of antennae reddish
 W 3.2 mm. As before but vent ① pale
 yellowish, with a few planned pale hairs
 the other vent blackish minous. Hair
 black, mostly, ^{thicker on 5 & 12} ~~thicker on 5 & 12~~
 Spinous white. Body brownish black with
 saty band very broad but segs, a row of
 velvety black dorsal spots but row ①

Laid to room Aug 21. on sticks with leaves
(and fly - dried up)

Ad Jan 1892

318 *Slipshin*? 291?

Egg  *Poplar*, ^{4th} *Prunus* July 29, 1891
Hemisphere ab, base flat, smooth, slightly
shiny whitish green, ^{the} micropyle round, small
black, under the $\frac{1}{2}$ in fly, ^{it is seen to be} covered with
irregular flattened acetabula, not
raised above surface of egg much as in
Cerura but more irregular, ^{ranging in shape} from quad-
lateral to hexagonal. diam 1.1 mm.

Got another 291 mature and same
(except the spiracles are more
crimson than orange) on *Populus*
tremuloides at Keene Valley, N.Y.
June 29, 1891. Walked July 1
Is it *Slipshin arimacula*?

Calc. 1.06 1.51 2.16 3.08 4.4 ratio .70
 found 1. 1.5 2.2 3.1 4.4

H. G. 3 DYABOL ^{found} July 31, 1891

Smearitten of YOSEMITE, CAL. Little
 green to July 29. Egg (hatched) elliptical,
 flattened above and below, smooth,
 $2 \times 1.8 \times 1.3$
 slightly shiny, (green?), on the microscope
 covered with rounded minute shallow depressions.

Stage I Head rounded, slightly flattened, green
 slightly shiny, dotted with yellow but not
 granulated with ^{crisp} yellow, from
 before eyes each side meeting below with,
 antennae & labrum white, jaws & ocelli
 black, thorax dark, annulated, minute
 fimbriae and dotted with yellow with a
 distinct pale yellow sd line and oblique
 lateral line 5-12 occurring above & below
 the sd line but dislocated except in
 12 where a single distinct line runs to
 base of horn. Horn annulated, pale, dark
 red, pink at base, 2 mm long. Can Aug 23, 1893

Stage II Head 1.5. Like Stage I but
 more grey. Hd 4.4 Hd triangular but vertex
 obtuse, rounded, slightly concave laterally

Taken back, not published
 Sep 11, 1893

and spine regularly hexagonal. 320
 Egg laid on branch of not on leaf
 Took tail egg on poplar. Little green to July 1891.
 Egg like 316, dark brownish black W 1.5 mm
 under glass the ^{reticulations} are ^{more} dense, less
 elongated, and the spaces between them denser with black
 granules. It is more like the rest of the species, with small
Stage I Hd 1.5, also, shiny, dark brown, labrum
 bluish above W .6 mm Body as in 316 but
 darker, almost black, the patches yellow,
 contrasting the ant. quadrate, the feet
 elliptical, not appose at their ends. It is
 dark with rest of body. Tails twice annulated
 with whitish, dark at the ends. Horn, body
 striate spinous. Head paler than body
 abd. feet pale but ventral & the feet dark.
 Extremities nearly black with a whitish
 line Aug 3

St. hd 2.2, 3.1

before vertex, 3 bagged. Bluish green, a broad
 yellow line from base of antennae to vertex
 much, there - jaws black, labrum reddish, ocelli
 blackish, antennae white. Body cylindrical
 annulated, with minute whitish granulations
 an obscure ant. line & 7 oblique lateral

319 cont.
 first 5/5-10
 lines, greenish ^{yellow} ~~white~~ except the last
 which is ^{black} or 11 & 12 to base of horn.
 creamy white. Horn tapering, minutely
 granulated, pale blue, purple at base
 sides & green at tip, 4.5 mm long. Anal
 plate & last pair of abd feet with faint
 yellow borders. Thor. feet reddish.
 Spiracles white with narrow black edge.

Male Aug 1941 rounded (antures deep), slightly
 narrowing to vertex; even red-brown with a few
 minute yellow dots; w. 8 mm ^[Sh. hd. 8] Body; 2 ^{is} swollen
 to ^{st. recess} ~~st. recess~~ ^{abdomen} ~~abdomen~~ ^{abdomen}; low rounded
 small setiferous tubercles, apparently normal
 in arrangement; anal plate & 2 shaped spines
 Body rust brown with 2 dorsal elliptical diffu-
 patches of yellowish green, the ant. 2-6, the
 post. 8-10; s-v region & all feet pale whitish
 Tails red brown at basal half, then blackish
 with 2 solid white annulations. L. 3.8 mm
 As at. adm. and yet larger, from s-v coloration &
 obscurely divided by a brown dorsal line. ^{white} ~~with~~
 the whole dorsal region become pale except 11. ✓

No 3 Aug 8 Hd higher than wide, rounded, not angular
flattened in front; reddish brown, ^{the upper 2/3} thickly covered
with little round yellowish spots, but leaving a
narrow line of the ground color on each side central
Antennae above 4 segments; antennae white; ^[Sh hd 1.15] 10 + mm
Body enlarged at 2, a pair of ^{beams} heavily spined
processes; tarsi minutely spined; the marginal

2. ① is 6 & 7 larger than the others

on the body consist of
 [redacted] are conical tubercles, each
 with a short spine. ~~Body green,~~ ^{the} shield
 colored like head; the horns ~~are red brown~~
 their tubercles pale. ^{body green,} A broad red brown dorsal
 band, very narrow & nearly obsolete on 3 & 4
 widening into an elliptical patch on 5-11 and
 inclining on 7 post, 8, 9 & 10 (and) a patch of the
 ground color faintly bisected by a brown dorsal
 line. On 12 & 13 the band is faint, only
 tinging these segments. Tails red-brown,
 twice annulated with green; L 4.5 mm.
 5 days after molt the mantle had ^{changed} (3 post) 11
 July 13 Body brighter colored; a red brown dorsal
 band begins under a 2 covering the horns, narrow
 a line on 4 is the highest point, rapidly widens
 & reaches spiracles on 8, then narrowing to a
 line on 12 & ^{again} widely covers anal plate. It is
 edged with yellow & continues on 6-9 in oblique
 yellow patches which is broken by a narrow brown
 dorsal line & the brown tubercles. The sides of the
 body are clear green dotted with yellow. The
 ant. annulation of tails yellowish green, the feet
 are yellow. Venter, esp. feet, whitish. J. 2
 edged ant yellow at the sides.

[illegible]

321

Copied
Nov 1, 91

Schizura? on maize Yps Aug 2, 1891 Egg
 shell outline from larva angular, spheroidal,
 flattened at base, $\times 1.1$ mm. hairs in covered
 with very narrow slightly elevated lines forming
 irregular pentagonal to heptagonal reticulations.
 becoming very small at micropyle. Hatch by hole in side
 Larva bilobed, rounded, very shiny blackish
 brown, yellowish at vertex; ocelli black; a
 few hairs; w. .5 mm. Body C shield with a
 pair of tubercles; 5 & 12 slightly enlarged
 dorsally, feet normal but anal pair elevated
 smooth, conical tubercles, normal in arrangement, rather
 large & each with a long hair, many of which are swollen at the end
 yellow, humps & lateral region wine red,
 C-sh. anal plate, tubercles & anal feet
 blackish, other feet shiny black. ✓

2nd Aug 1st bilobed, high, narrow to vertex
 a flat in front; a tubercle at vertex & dark
 lobe; w. .8 mm, uniform brown, not shiny, vertex little darker
 Body slightly enlarged dorsally on 5 & 12, the
 tubercles very large, especially dorsally, conical
 smooth, each with a short seta, anal feet
 elevated, part of setae. Translucent on larva

under microscope seem to be swollen at tips.
 Body reddish brown, humps & lateral with yellow
 dorsally, 5 & 12 darker as are also the tubercles
 C-shield & anal plate dark. A yellow dorsal
 spot on 11 & 12 directed by a brown d-line.

— 2nd Aug 1891

little separation from and further and a greater normal line part. as under them on 4

316 cont not rescript
 with little whitish & brownish dots, a few small spots
 of brown & a s-v row from spot corresponding
 to legs at apical edge, dorsal band ferruginous
 brown, consisting of 3 connected patches, first
 triangular, covering horns, on 2 marked like
 head, narrowing to a line at the elevation of
 3 feet, second rapidly widening, reaching below
 spiracles on 8 & narrowing to line on 11 feet.
~~retreated~~ at the ap. section, shaded with
 blackish brown around its borders & containing
 a darker dorsal & oblique & d line bands
 from dots representing the tubercles, third on
 12 feet & 13, elliptical, covering anal plate
 largely replaced by whitish part. All the patches
 bordered by a continuous yellow line. Tail
 brown, green below at base & twice annulated
 with yellowish green; Length 7 feet. Brown
 to stage advanced & dorsally slightly purplish, with
 dark brown shades and on the horns, intersected
 by a narrow yellowish line. patch 2 seven times
 retracted on its edge (in its increase) darker than at
 first, the horn described about 3 pale orange patches
 appear on each side just to the oblique line (in some
 these patches are large or confluent) & ^{become} pinkish
 yellow. A purplish tint suffuses the dorsal patches
 then a narrow reddish edging inside the more obscure
 yellow dots. ^{pink} central. Between the yellow
^{beiges} to corn soft horizon which is usual. Corn thin not
 tube cylindrical, slightly flattened ventrally, the
 end rounded, no annulation, shiny blackish
 brown, the cross darker, almost black, wrinkled
 and much less shiny than the abd. L. 14 W. 4.5 mm

Calc. 1.1 1.6 2.2 3.2 4.6 ratio 7
 Found — — 2.2 3.2 4.5

322

Phaneros californica ^{wild coffee}
^{wild blue}

Samia ceanothus? on *Ceanothus integrifolius* Aug. 6, '91

Egg elliptical, much flattened above & below
 smooth, white, largely stained with a red-
 brown gland which serves to glue the egg to a
 leaf. Dimensions $2.2 \times 1.9 \times 1.2$ mm. A little
 swollen at top, indurated in obj, covered with slight
 depressed rounded reticulations & minute punctures

3rd hd, rounded smooth green, with a few
 short hairs; ocelli black; w. 2.5? mm. Body as
 in *cecropia*, 2 rather small, rather larger than
 elsewhere 3-5, cylindrical, abd legs thick
 & black. There are of elongated smooth tubercles
 with a crown of radiating spines, 4-7 and a small
 ventral one; ① s-d, ② lateral ③ s-v and a
 fourth on 2-4 only, above bases of legs. on 12
 in place of ① a single dorsal tubercle, on 13
 but no s-d & lateral, and a single pair on
 the anal plate. Dorsal on 3-12 yellow, all
 the rest pale blue, the s-d black. Body
 uniform green, the feet yellow, tipped with
 black, abd feet tipped with yellowish.

Spiracles small, white, narrowly ringed
 with black. Tubercles of nearly uniform size
 except dorsal on 12 which is rather larger.
4th Aug 2 hd rounded, smooth green, yellowish
 at vertex; antennae yellowish, black at tip,
 ocelli & jaws black; w. 3.2 mm. Body as
 before except that the s-d tubercle on 3-5
 and dorsal on 12 are much larger than
 the others which are proportionally reduced
 in size around the middle of each s-d
 tubercle 3-5 is an elevated blackish ring
 bearing a few very short spines. The large
 tubercle on 12 has 2 vertical spines. Lateral
 tubercles on 3-5 rather larger than the
 other blue tubercles which are smaller than
 all the blue tubercles are black ringed at base.
5th Aug 10 Head smooth, slightly flattened, green;
 ocelli & jaws black; labrum & antennae
 tinged with brownish; w. 4.5. Body very large
 especially at 11 & 12; the head 2 2 joints contracted.
 On 2 tubercles ① & ② are reduced to small
 bluish black ringed spots ③ on 2 and ④ on

2-4 very small tubercles, conical, bluish,
black ringed at base & bearing a few spines.

① on 3 & 4 large thick, and very long, with
short spines & a broad elevated black band
around the middle. ② on 5 & dorsal & 12
similar but slighter, the black ring broken
into several confluent elevated black spots.

③ 3-12 yellow, on 6-11 spiracle shaped
small, with no spines nor black marks.

④ 3-13 similar but white with a black
ring at base, those on 3 & 4 slightly spiracle
with small black spine the rest smooth.

⑤ like ④ but smaller, directed backward
& minute spine on the ones on 3 & 4. The
tubercles on anal plate are very small
bluish & black ringed. Body smooth, leaf
green, ^{with a whitish bloom} the feet all tinged with yellowish
then tips blackish. anal plate bordered
with a yellowish shade. spiracles whitish
with a very narrow black border.

Length ^{95 mm (ant. stages)} 75 mm (1st instar) and 16 mm

another similar but with a trace of wing

There are little scars representing tubercles ② & ③
on the middle segs.

tubercles 6-11, on 3-5 ① normal ②

reduced to minute bluish black ringed
^{about 1/2} spots, ③ absent. On 12 the dorsal tubercle
only present. The spots on 2 and small
tubercles on anal plate are present as in
the normal form. Ecdysis scarce.

Cocoon Found of silks on a twig like
that of cecropia in size, form & structure
Lupa. Robust but very short, abd. segs
abruptly tapering, almost truncate. oc-
casionally a large rounded prominent
tuberculate but without spine.

abd. incisures marked. Antenna
cases large, covering half or more of the
wing cases, marked in the form of
antennae. wing cases coarsely wrinkled
color black, almost sooty, a brown
tint appearing on the abd. segs. feet
and ventrally. Length 27 mm; w. 19 mm
thickness 14 mm.

Europe Feb 12, 1892 ♂ coll. no. 6960.

Atropa cantharis

Calc. 1.1 1.6 2.2 3.2 4.6 ratio .70
 Found — — — 3.3 4.5

323 (See 38 344)

Pseudochoris cglanternia? on *Mangamita*, top of
 female fall Aug 12, 1891. Hd rounded, shiny
 brownish black with a number of coarse
 pale hair [Sh. hd 3.3] w 3.5? mm Body entirely sooty
 black, with traces of a dull crimson stig.
 line. Spinach pale horn, clasp of abd feet
 dull crimson. The spines are arranged
 much as in *S. ceanothi* but more numerous
 ① s-d, a single dorsal one on 12 and on 13
 just beside the regular lateral one of 13, none
 on anal plate ② lateral 2-13, ③ sub-
 stig 2-13, ④ along bases of legs on 2-6, 11,
 12 and 13 ant. (i.e. on thoracic & legless ^{except 12} legs)
 ⑤ consists of a dense bunch of dull yellow
 spin. black at base & top ³⁻¹² the other rows
 have a distinct black shaft from which
 radiate many similar spine with ^{stiff} hair
 at the end of each. On the body are many
 soft pale hair growing from the skin
 shield & anal plate shiny black.


As stage adv. whole body very shiny black.

Sept 17
 1893

Nov 5 Aug 20 Hd rounded, median suture deep
 inflexed, clypeal suture double, many coarse
 pale hair; shiny black, shaded dull crimson
 in clypeus. 4.5 mm. Body when first molted
 olivaceous narrow crimson s-d, lateral & s-v line
 but these becoming faint & ^{body} becoming uniform black, the
 feet tinged crimson. Spinach white, with
 a black line centrally. Spine & hair as before.
 the hair white, not long but quite thick.
~~Some~~ (Monterey) have the s line white, narrow & faint.
 s-d, lat. & substig, all broken, the substig.
 the most distinct and partly continuous.

Calc .47 .75 1.25 1.84 2.7 (3.9) ratio .68
 Found — — 1.3 1.9 2.6

Apple 324

Oedermaia larva on maple, trail to Snows, Aug 12, 1911.  Shell, hairs present, but rounded at base, base flat centrally, smooth slightly shiny; under microscope ~~covered~~ ^{dimpled} with small hexagonal areas, their boundaries not distinctly raised and hardly distinct enough to form reticulation. ^{Over 100 in batch} D. 8 mm. Hatch by large hole in top.

Stage 1? Head rounded, higher than wide, narrow slightly to vertex. Frontal suture deep; a tubercle before apex of each lobe: slightly shiny black;

[Sh. hd 1.9] w. 1.8 mm. A slight dorsal hump on 5 & 12, post. segs. elevated. C-sh. & anal plate black, the former bisected. Tubercles rounded, smooth shiny black, the dorsal ones especially on 5 elongated,

① next d-line, ② s-d ③ lateral, ④ sub-sty! ⑤ & ⑥ s-v, ant & post, ⑦ on ventr of legless segs. There are several supplementary black dots on the anterior segs. which make the arrangement not normal; on 13 two pair of s-d & lateral & several ventral. Feet & spiracles black. Body yellow with s-d & lateral white line.

In some the space bet. s-d & lat. became filled with white, divided by the brown line,

edged above & below with brown, distinct only 6-11. [Specific enumeration of tubercles On 2, ① three on c-shield, each + hair; ② 1 lateral; ③ 2 sub-ventral, ant. & post. On 3 & 4 ① next dorsal post, ② s-d, little ant ③ super-lateral ④ lateral, small ⑤ 2 sub-sty in line ⑥ just below, ant. ⑦ above base of leg. On 5-12 ① next dorsal, ant. ② s-d ③ lateral ④ sub-sty ⑤ s-v ant, ⑥ s-v post. ⑦ on ventr of legless. On 13 ① 2 s-d, ② 2 lateral ③ 1 s-v and ④ dots on ventr base 3 on each half of anal plate & 1 on anal post below]

Stage 2 Aug 18 1st higher than wide, rounded, anterior deep, no tubercles but a few blackish hairs.

Smooth, shiny blood red, smooth parts and antennae black; w 2.6 mm Body yellow, slightly orange tinted s-v and a very faint rosy tint on the humps on 5 & 12. Tubercles elongate, especially ② on 3 & 4, ① & ② on 5, ① on 6-9 (gradually diminishing, those on 10 & 11 not especially long) and ① on 12, (① on 5 the longest, full 4 times as long as wide at base) very shiny jet black. A dorsal black line, germinate s-d, lateral & trace of s-v, filled in with white, all absent on 5 & 12 & slight broken on 2-4 and 13.

C-shield bisected, anal pl. & feet, shiny black. A blackish band along legs (broken by feet)

(As 3rd as in 1.9 stage, head 1.3. Each tubercle with a hair. length of larva 10 mm) Was at adv. faint brown line appear bet. d- & s-d s-d & lateral, and stig., the hump is rosy red as, but on 12 yellow. head

Extend ground 4/25. Coar. spin at surface
 of ground with pebbles closely over outland,
 of white silt but not very tough.

Capa cylindrical, rounded at ends (not
 formed till spring) Thorax smooth, with a
 curved row of vertical granulation behind it
 & a double point with deep base bed, legs
 abd punctured centrally, smooth at the sides
 ites. Acuminate 2 short thick pointed

Image Feb 5, 1892. Cal. No. 6935

Adamasia salicea 2.54
 Length 18 1/2" Dutton 2.59

Phidippus
 2 1/2" 18 1/2" 3 9 9
 5 mm apart and about as far
 above the anal mark. Color uniform brown
 rather light in shade L. 13 W 5.5 mm

13 4 3
 13 1 1
 16 1 5
 7 2 4
 16 1 9
 4 9 2
 3 2 5
 1 6 6
 2 9 5

